Wayne Township Landfill Gas Energy Project for Jersey Shore Steel

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Background – Jersey Shore Steel

- JSS operates a rail steel re-rolling mill
- Heat rails to 2250^{o} F in reheat furnace
- Slit rails into flat pieces
- Roll pieces into angle sections, mainly used in the furniture industry

Background – Wayne Township Landfill

- CCSWA's Wayne Township Landfill adjacent to JSS property
- Landfill approved to accept waste through 2016
- At time of project startup, landfill was flaring approximately 12 million British Thermal Units of heat per hour (12 MMBtu/hr)
- Landfill looking for a way to flare less LFG, raise revenues, and support community

Project Timeline

- 1998 – CCSWA and JSS met to discuss firing of landfill gas in the reheat furnace
- 1999 – CCSWA built:
  - an LFG pre-treatment system to compress, filter, and dewater the LFG
  - a 2.5 mile pipeline to JSS
  - pipeline crossed the Susquehanna River on an old railroad bridge
- 1999 – JSS installed necessary piping, valves, and controls; began a trial to use 12 MMBtu/hr of LFG in the pre-heat zone of their furnace

Project Timeline

- 1999 – JSS
  - installed necessary piping, valves, and controls;
  - began a trial to use 12 MMBtu/hr of LFG in the pre-heat zone of their furnace
- 2000 – JSS revamped the mill
  - installed new Bricmont reheat furnace
  - three-zone furnace, rated at 55 MMBtu/hr.

Project Timeline (continued)

- 2000 – New JSS furnace
  - equipped to fire LFG on one zone at 12 MMBtu/hr
  - by July, CCSWA was producing 18 MMBtu/hr.
- 2001 – JSS added LFG to second zone.
- CCSWA LFG production continued to increase to 24 MMBtu/hr.

Project Timeline (continued)

- 2002 – JSS added LFG to remaining zone. Furnace became capable of using LFG, natural gas, or fuel oil in any zone.
- 2003 – JSS commissioned an LFG/natural gas blending station designed by Bricmont Furnace. System uses LFG first, up to current supply of 970 cubic feet per minute, then adds natural gas as needed to match production requirements.
- Today – CCSWA supplies JSS with about 30 MMBtu/hr when operating the mill

Challenges

- Installation Costs –
  - JSS installed “duplicate” safety and control valves on each zone of reheat furnace.
  - CCSWA built compressor station and pipeline system.
- Steady Flow Rate –
  - LFG is produced at a steady rate 24 hours a day, 7 days a week.
  - JSS currently operates on 2 shifts. Even when JSS operates on 3 shifts, LFG produced on the weekend must be routed to flare.

Challenges (continued)

- High temperature requirement –
  - The JSS operating permit requires the reheat furnace to be above 1600^{o} F when firing LFG.
  - The JSS furnace operating temperature is well above this requirement.
  - However, this requirement may limit use of the LFG for lower temperature processes.

Advantages

- Lower fuel cost
  - JSS buys LFG at 70% of the price of natural gas.
  - CCSWA capped price of LFG for JSS in 2002 when natural gas market rose.
- Reduces JSS dependency on natural gas

Advantages (continued)

- Reduces air pollution
  - LFG is about 50% methane, a potent greenhouse gas that also contains other odor-causing compounds.
  - Using LFG as a fuel offsets other fuel use, making significant air quality improvement.
- Liability turned into revenue stream – CCSWA sells LFG to JSS that otherwise would be burned in flare as waste

The Right Place at the Right Time

- Right Place – CCSWA and JSS facilities are about 2.5 miles apart, also separated by about 1000 ft of the Susquehanna River. Fortunately, CCSWA obtained permit to cross river on abandoned railroad bridge.
- Right Time – As the LFG production increased, investments to utilize LFG in JSS reheat furnace became economically justifiable.

Project Key Personnel

The late Paul W. Reeder

Jay Alexander, CCSWA General Manager

CCSWA Board of Directors

Jack and Peter Schultz, Owners of JSS